

REMARKS

Upon entry of the present reply into the record, claims 1-12 and 14-19 will remain pending in the subject application. Claims 1, 6, 10, 11, 12, 14 and 17 are written in independent format. Previously, claim 13 was cancelled.

A. Introduction

In the outstanding Office Action Made Final, claims 11 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,993,314 to Lim et al. ("the Lim et al. reference") in view of U.S. Patent No. 5,929,716¹ to Komori et al. ("the Komori et al. reference") and U.S. Patent No. 5,821,820 to Snider et al. ("the Snider et al. reference"); and claims 1-10 and 14-19 were allowed.

B. Asserted Obviousness Rejection of Claims 11 and 12

In the outstanding Office Action Made Final, claims 11 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Lim et al. reference in view of the Komori et al. reference and the Snider et al. reference. This rejection is respectfully traversed for at least the reasons set forth below.²

A feature that distinguishes claim 11 over the Komori et al. reference is a low noise amplifier including an LC resonance circuit having an inductor and a capacitor, wherein a capacitance of the capacitor is adjusted using a control voltage provided by a phase locked loop to thereby change a resonance frequency of the LC resonance circuit. In FIG. 6, the Komori et al. reference teaches that a portion of a voltage controlled oscillator (VCO) 1 is controlled according to a "controlled voltage" generated by a PLL synthesizer 4.³ The portion of the VCO 1 controlled according to the controlled voltage is not an LC resonance

¹ The Examiner confirmed the reference should read U.S. Patent No. 5,929,716 to Komori et al. in a June 29, 2007 telephone call.

² These comments are particularly directed at the characterization of the Komori et al. reference, relied upon as supplying elements which the rejection acknowledges as lacking in the Lim et al. reference.

³ See the Komori et al. reference, col. 6, lines 31-34. It is noted that the details of the VCO 1 in FIG. 6 are illustrated in FIG. 2; see col. 6, lines 27-29. FIG. 2 is discussed below.

circuit,⁴ nor does such control involve adjusting capacitance,⁵ nor is the VCO 1 included in a low noise amplifier. Hence, the low noise amplifier including the LC resonance circuit having an inductor and a capacitor, wherein a capacitance of the capacitor is adjusted using a control voltage provided by the phase locked loop, is a feature that distinguishes claim 11 over the Komori et al. reference.

An objective of the Komori reference is to provide a VCO that does not use variable capacitor diodes, i.e., to provide a VCO that does not adjust capacitance in order to control the VCO.⁶ FIG. 2 of the Komori et al. reference illustrates a VCO.⁷ It is noted that FIG. 2 illustrates the details of the VCO 1 of FIG. 6, mentioned above. The VCO of FIG. 2 includes an LC resonance circuit and a phase shift circuit. The LC resonance circuit includes an inductor L₀ and a capacitor C₀.⁸ The phase shift circuit includes transistors Q5 and Q6, two current sources I_e, and a capacitor C_e.⁹ The two current sources I_e are illustrated in FIG. 3¹⁰ and generate a controlled voltage V_c.¹¹ The phase shift circuit is controlled by the controlled voltage,¹² whereas the LC resonance circuit in the VCO of FIG. 2 is not. Thus, no capacitance is adjusted in order to control the VCO of FIG. 2. Hence, again, the low noise amplifier including the LC resonance circuit having an inductor and a capacitor, wherein a capacitance of the capacitor is adjusted using a control voltage provided by the phase locked loop, is a feature that distinguishes claim 11 over the Komori et al. reference, in particular over FIG. 2 thereof.

⁴ See the discussion below of FIG. 2 of the Komori et al. reference.

⁵ See the discussion below of FIG. 2 of the Komori et al. reference.

⁶ See the Komori et al. reference, col. 2, lines 12-15.

⁷ See the Komori et al. reference, col. 3, lines 14-16.

⁸ See the Komori et al. reference, col. 3, lines 20-22.

⁹ See the Komori et al. reference, col. 3, lines 36-45.

¹⁰ See the Komori et al. reference, col. 4, lines 14-16.

¹¹ See the Komori et al. reference, col. 4, lines 9-17.

¹² See the Komori et al. reference, col. 4, lines 60-62.

It is noted that FIG. 1 of the Komori et al. reference illustrates a VCO that includes an LC resonance circuit¹³ having varactors VC₁ and VC₂ and a differential amplifier.¹⁴ The capacitances of the varactors VC₁ and VC₂ are varied according to a controlled voltage,¹⁵ though the source of the controlled voltage provided to the VCO of FIG. 1 is not discussed. FIG. 1 is labeled as prior art vis-à-vis the invention of the Komori et al reference. Given the stated objective of the Komori et al. reference to provide a VCO that does not use variable capacitor diodes,¹⁶ the skilled artisan would have understood that the Komori et al. reference teaches away from the capacitance-adjusting aspects of FIG. 1. Furthermore, the VCO of FIG. 1 is not included in a low noise amplifier. Hence, again, the low noise amplifier including the LC resonance circuit having an inductor and a capacitor, wherein a capacitance of the capacitor is adjusted using a control voltage provided by the phase locked loop, is a feature that distinguishes claim 11 over the Komori et al. reference, in particular over FIG. 1 thereof.

A feature that distinguishes claim 12 over the Komori et al. reference is a power amplifier including an LC resonance circuit, the LC circuit including an inductor and a capacitor, wherein a capacitance of the capacitor is adjusted using a control voltage provided by a phase locked loop to thereby change a resonance frequency of the LC resonance circuit. Again, the Komori et al. reference teaches that a voltage controlled oscillator (VCO) 1 is controlled according to a "controlled voltage" generated by a PLL synthesizer 4.¹⁷ The VCO 1 is not an LC resonance circuit,¹⁸ nor does such control involve adjusting capacitance,¹⁹ nor is the VCO 1 included in a power amplifier. Hence, the power amplifier including the LC resonance circuit, the LC circuit including an inductor and a capacitor, wherein a capacitance

¹³ See the Komori et al. reference, col. 1, lines 23-26.

¹⁴ See the Komori et al. reference, col. 1, lines 20-23.

¹⁵ See the Komori et al. reference, col. 1, lines 34-38.

¹⁶ See the Komori et al. reference, col. 2, lines 12-15.

¹⁷ See the Komori et al. reference, col. 6, lines 31-34.

¹⁸ See the discussion above of FIG. 2 of the Komori et al. reference.

¹⁹ See the discussion above of FIG. 2 of the Komori et al. reference.

of the capacitor is adjusted using a control voltage provided by the phase locked loop, is a feature that distinguishes claim 12 over the Komori et al. reference.

The Snider et al. reference does not make up for the deficiencies in the Komori et al. reference noted above. Applicant respectfully submits that the combination of the Lim et al. reference in view of the Komori et al. reference and the Snider et al. reference does not teach or suggest each and every element of claims 11 and 12. Therefore, claims 11 and 12 are allowable over the cited prior art. Accordingly, Applicant respectfully requests that the rejection of claims 11 and 12 be favorably reconsidered and withdrawn.

C. Allowed Claims 1-10 and 14-19

The indication that claims 1-10 and 14-19 are allowed is gratefully acknowledged. However, it is respectfully submitted that all of the claims are in condition for allowance.

D. Conclusion

The above remarks demonstrate failings of the rationales for the outstanding rejections, and are sufficient to overcome the outstanding rejections. These remarks, however, are not intended to, nor need they, comprehensively address each and every reason for the patentability of the claimed subject matter over the applied art. Accordingly, Applicants respectfully submit that the claims are allowable for reasons including, but not limited to, those set forth above, and patentability of the claims does not depend solely on the particular claim element(s) (if any) discussed above.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In view of the foregoing amendments and remarks, reconsideration of this application is earnestly solicited, and an early and favorable further action upon all the claims is hereby requested.

Respectfully submitted,
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